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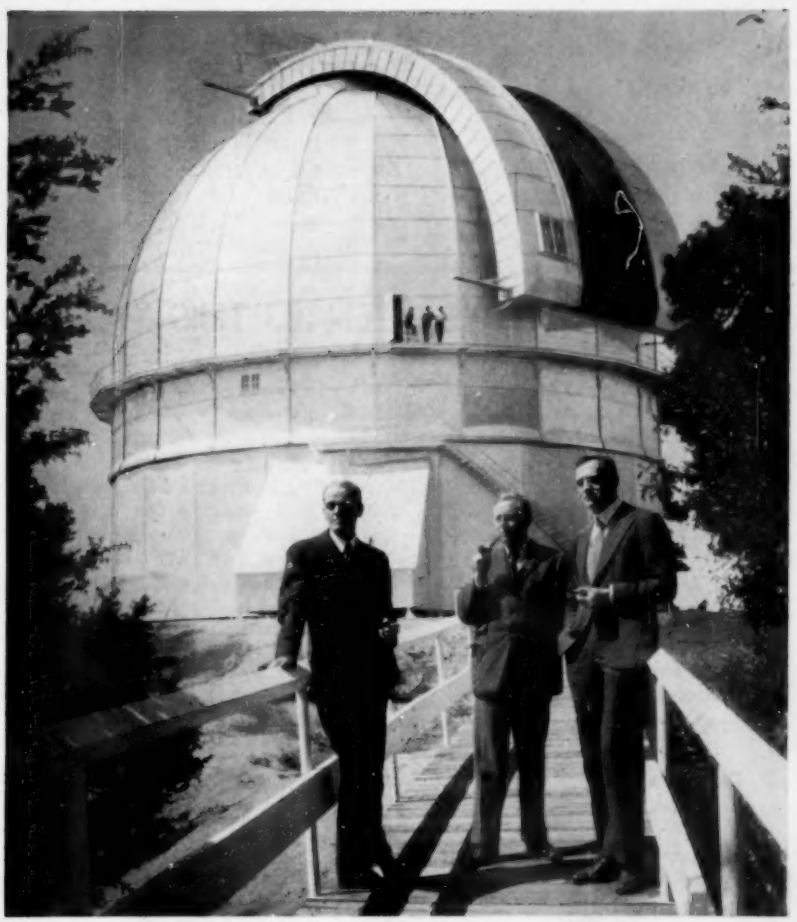
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



MAY 30, 1931

Searchers of the Sky

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SCIENCE NEWS LETTER

VOL. XIX *No. 529*

The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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• DO YOU KNOW THAT •

A case of skin poisoning traced to the handling of chrysanthemum leaves is pronounced the first of the sort in medical literature.

North America's coldest region in winter is between Hudson Bay and Alaska.

Cubs of the American black bear are very tiny at birth, weighing less than a pound each.

A French candy company, wishing to combat race suicide, established a model village to encourage large, healthy families, and has so far evicted seven families because sufficient children were not forthcoming.

The name Canada is from the Huron Indian word for village.

In a black bass "family" the male prepares the nest and later stands guard over the eggs.

Tests of 150 gasoline "dopes" by the U. S. Bureau of Standards showed that all were ineffective.

Dishes and glasses that are designed to be spill-proof have been displayed, for use in serving passengers on airplanes.

Experiments at Cornell University show that clothes moths lay eggs during any month of the year, and the eggs will hatch in any month.

Archaeologists digging at Sakkhara found a life-sized statue of an Egyptian king surrounded by a stone cabinet through which two holes were pierced at eye level, so that the king might look out.

Residents of Kansas object to the name "cyclone state" because the state really ranks seventh in annual wind damage and few Kansans have ever seen a cyclone.

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Science Service presents over the radio, an address

HOW SCIENCE STUDIES THE CHILD

By Dr. Arnold Gesell, director of the Clinic of Child Development of Yale University, who has pioneered in the field of testing the mental growth of infants

Friday, June 5, at 2:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

ASTRONOMY

Life is Rare in Universe Astronomer Believes

Sir James Jeans, Honored in U. S. By Award of Franklin Medal, Calls Outward Rushing of Nebulae a Major Problem

LIFE is a rare phenomenon in the universe, Sir James Jeans, British astronomer, assured the Franklin Institute meeting at which he was presented the Franklin Medal, one of Science's highest awards.

"I leave it to you to be pleased or not," Sir James said, "at a large fraction of the life of the universe being concentrated on our planet."

His theory is that the planets were formed by the close approach to the sun of another star that pulled out of the sun by tidal action a great cigar-shaped streamer of gas, which condensed like drops of steam into the planets.

Since stars are scattered in space as sparsely as three grains of dust in a large room, the close approach of two stars is a rare accident of the universe, Sir James explained. Life can only exist on just the proper kind of planets created by such passing of stars in the universe. For this reason Sir James considers life very rare indeed.

Sir James has been lecturing in many different parts of the country during this week and last. He visited the Mt. Wilson observatory in California, and the cover of the SCIENCE NEWS LETTER this week shows him standing before the great 100-inch telescope, at present the largest in the world. Sir James is pictured in the center, Dr. Edwin P. Hubble is on the right, and Dr. Walter S. Adams on the left.

Is the Universe Flying to Pieces?

Astronomers at Mt. Wilson are now intensively at work on the solution of the universe's greatest scientific problem:

Is the universe actually exploding extremely rapidly like a gigantic shell, flying to pieces at rates of thousands of miles per second, and doubling its size every fourteen hundred million years?

Sir James Jeans revealed after visiting Mt. Wilson Observatory in California that an answer to this important question may be expected from a dual attack by Mt. Wilson scientists which promises to be successful in just a few years.

The discovery that the great nebulae or gigantic star groups are rushing away from us at terrific speeds, some as high as 12,500 miles a second, was termed by Sir James "a major difficulty in understanding the processes of nature." This outward bursting of the universe's units was discovered at Mt. Wilson Observatory through shifts in the spectral lines of light from the distant nebulae.

As to whether the immense recessional velocities observed by Mt. Wilson astronomers are real exploding motions of the universe or whether the research now in progress will prove them to be merely apparent effects that can be explained otherwise, Sir James did not express an opinion.

But he did explain that the stars are known to be millions of millions of years old and that the universe if it has been exploding continuously must have once been extremely small and compact.

Explaining the size and structure of the universe as explored by the Mt. Wilson telescopes, Sir James said that if the farthest reach of the largest telescope today, a distance that would take light a hundred and forty million years to cross, were only one mile, and 300 tons of apples were scattered about approximately twenty-five yards apart, then each apple would represent a nebula or gigantic aggregation of stars like the Milky Way system in which our sun is but one of several hundred million stars.

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RUSHING AWAY

This Andromeda Nebula and the many other gigantic star groups speeding with it are called by Sir James Jeans "A major difficulty in understanding the processes of nature." This photograph was taken with a powerful telescope; to the naked eye the group appears as a single patch of light.

ARCHAEOLOGY

Illinois Indian Site Of 2000 B. C. Found

CAMP FIRES that burned in native settlements of the Mississippi Valley back in the days when the Pharaohs ruled in Egypt have just been uncovered by an archaeological expedition of the University of Iillinois which is excavating at Starved Rock, on the Illinois river. The camp fires were found buried nine feet from the surface of Plum Island, Dr. A. R. Kelly, director of Illinois archaeological explorations, has just announced.

The land where the camp fires were found is now covered by a river bar regarded as at least 3,500 to 4,000 years old on geological evidence, Dr. Kelley stated.

Indians of five and possibly six different types of culture lived in the neighborhood in the course of centuries, the expedition has discovered. The latest were the historic Illinois tribe, one of the tribes of the great Algonkian Indian group.

The different cultures have been identified not only by different kinds of pottery which they made, but also by different methods of mound construction which they employed, and different burial customs and burial furniture, Dr. Kelley explained.

The Illinois Indians had a very large village at this point at the time when La Salle explored their region. The middle portion of the village has been located by a previous expedition from the University. The settlement extended some five miles along the Illinois river, and the present expedition is trenching to locate the east and west limits, Dr. Kelley said.

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MEDICINE

Feeling Brain Holds Secrets of Nervousness

A Vacation Unwisely Planned May Lead to Breakdown, Physician Warns; Lapses From Routine the Only Antidote

SCIENCE must search the feeling brain for the secrets of nervousness or nervous exhaustion, Dr. Louis J. Karnosh, assistant professor of nervous diseases at Western Reserve University, reported to the Health Education Foundation of the Academy of Medicine at Cleveland, Ohio.

"Nervousness, or neurosis, next to the ordinary cold, is the most common affliction of man," he declared. "Nervousness is on the increase. It is just as frequent in the unschooled as in the educated, less frequent in children and among savage peoples, and very rare in the animal world.

"Nervousness increases as surroundings become more complicated, as living takes on a livelier tempo and competition among human beings becomes more specialized, but less strenuous."

Dr. Karnosh described the small brain center at the base of the cerebrum, known as the diencephalon, which he called the feeling tone brain, or organ brain, because it consists merely of a gathering together of nerves from all the vital organs of the body to form one diffuse sensation center.

"In the mazes of the nervous system which connects heart to lungs, to intestines, to glands, to liver and in turn to this little diencephalic center forming the feeling tone brain, lie the secrets of nervousness and nervous exhaustion," Dr. Karnosh said.

He pointed out the need for further study of this brain.

"Only a few investigators have concerned themselves with what is actually gone wrong in nervous exhaustion," he said. "Where there are hundreds of ready advisors as to cause and treatment, there are a handful who have a faint idea of what is going on in the nervous constitution.

"Life's impacts, it seems, are hard on the brain of feeling tone. The things we do with greatest satisfaction are the things we feel like doing. The pursuit of pleasure and happiness is an end in itself; man's higher brain merely shows us how more cleverly we can attain that end."

The cause of nervous breakdowns in middle life lies in our technic of living which either fails to exercise the vital-brain adequately or drains it by a distorted use of its forces, Dr. Karnosh said. He blamed the monotony and specialization of the machine age living for the American neurosis.

"Play and a vacation, to do each day something that is not dictated by a rational and methodical world, to lapse into a purposeless meandering and a lack-a-daisy sally—not to work at play in methodical fashion—these are the only antidotes we can safely offer to those who are parts of the modern machine.

"The man who plans a vacation by consulting time-tables and lays out a stop-watch itinerary had better stay at home. He may get a nervous breakdown trying to adhere to it.

"The man who works for four hours with great intensity in the office and then spends two hours watching a steam-shovel digging in a vacant lot is a safer risk against nervous exhaustion."

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It has been estimated that 8,000,000 automobiles on the roads of the United States are worth not more than $25 each.

Elevators in the new Empire State Building in New York City can shoot up to the eightieth floor in less than a minute.

BIOLOGY

Certain Chemicals Will Put Yeast Into Sleeping Stage

NEW facts on the chemical control of the life processes of the yeast cell were reported to the meeting last week of the Royal Society of Canada by Dr. Helen Stantial and Dr. W. Lash Miller, of the chemistry department of the University of Toronto. They have found that acetate of soda and certain sugars will send yeast into a spore or sleeping stage.

It was Dr. Miller who two years ago surprised biological investigators by announcing at a meeting of the Royal Society the chemical formula for a substance, similar to but not identical with the vitamins, which is necessary for the growth of yeast.

Dr. Miller chose yeast cells because each microscopic yeast plant is composed of only one cell. This simplifies the investigation. Yeast cells, less than a thousandth of an inch in diameter, can be brought up in large families all alike, and they can be watched at work under the microscope. Their activity shows itself by certain chemical changes which can be found by analysis. In addition to being easy to work with as material for biological experiments, the yeast cell goes through the same changes as the cells of larger living things.

Dr. Stantial and Dr. Miller can now do some of the things by means of lifeless compounds for which elusive vitamins, extracts of glands, or blood serum preparations were thought necessary.

These chemists have discovered that yeast grown with grapefruit juice would readily form spores, or go to sleep. This spore-forming behavior is sometimes resorted to by yeasts dried up or deprived of food material. Analysis of the grapefruit juice revealed the constituents which serve as a sleeping powder. They are now inquiring whether yeasts which have sporulated can remember processes they have been taught. This experiment is of interest in the science of heredity.

Inosite, an alcohol, the magic compound previously announced as one of the essentials for growth, may be the agent which makes the cells break in two. On a diet containing insufficient inosite, giant yeast cells, or clusters stuck together, can be produced.

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ASTRONOMY

Eagle and Graceful Swan Herald the Coming of Summer

By JAMES STOKLEY

CONSTANTLY in a state of change is the starry sky. A couple of months ago we were enjoying, in the evening, the constellations of Orion, the mighty warrior, with his upraised club, about to smite the bull, Taurus, and attended by the two dogs, Canis Major and Canis Minor. Auriga, Perseus, Andromeda and Gemini, as well as others, were conspicuous. But these groups have disappeared. In their place have come other groups, visible in the eastern evening sky. Which are the finest constellations? None can say, for, after all, it is a matter of taste. To some, the magnificence of the winter groups appeals, while the more delicate figures that appear in summer have an attraction for others. But whenever one gazes on the starry sky, whether in winter or summer, or even from countries far to the south, where one looks at constellations known to us inhabitants of northern countries only by hearsay, there is visible one of the grandest, perhaps the grandest, sight that nature has in store for us.

Just now, the constellations of summer are coming into their own. To be sure, it is not strictly correct to say "the constellations of summer" for we could have seen exactly the same groups that now decorate the evening sky last January, if we had taken the trouble to get up before sunrise for a look at the stars. But now it is not necessary to resort to such Spartan measures to see such familiar groups as Scorpio, Aquila and Cygnus.

Let us start with the groups that have been with us for recent months in the evening. Almost directly west is Leo, the lion. Six stars in this group form the "sickle," a good representation of that agricultural implement. The blade is directed downwards, and the handle, marked by brilliant Regulus at the end, points to the southwest. Above Leo, and to the north, is Ursa Major, the great bear, the most familiar part of which is the Dipper, with the two stars at the end of the bowl forming the pointers and indicating the direction of the pole star, Polaris.

At the other end of the dipper is the handle, really the huge tail of the bear. Follow along the handle into the next constellation, and you are looking at Bootes, the wagon driver. Here is the bright star Arcturus, almost directly overhead on June evenings. Below Bootes to the south is the constellation of Virgo, the virgin, marked by the first magnitude Spica. Leo and Virgo are two of the zodiacal constellations, that mark the ecliptic, path of the sun, the moon and the planets. Next to Virgo is Libra, the scales, one of the least conspicuous of the star groups of the zodiac, as its brightest star is only of the third magnitude. However, it is not hard to see, if you know where to look. The five principal stars form a rather rough pentagon. The highest of these, beta Librae, is pale greenish in color, the only naked-eye star of such hue. Its name, seldom used, is Zubeneschamali, an Arabic word meaning "the northern claw." Originally, Libra was not a separate constellation, but part of the next one, Scorpio, representing the animal's claws. Hence the proper name for beta. Scorpio is low in the southeast.

Ruby Rival of Mars

Contrasting greatly in color with beta Libra is the brightest one in Scorpio, Antares, distinctly red in color and marking the scorpion's eye. The name means the "rival of Mars," an allusion to its resemblance in color to that planet. Low in the east, a little above the horizon, is Aquila, the eagle. The bright Altair is the star that marks it. Then, to the north, is the swan, Cygnus, sometimes referred to as "the northern cross." The cross is now horizontal, and at the head, to the north, is the star Deneb. As a swan, however, Deneb marks the tail. The body of the cross is the long neck of the bird, as it flies southward through the Milky Way, and the cross arm represents the wings. Just above the southern end of the cross is Lyra, the lyre, in which the brightest star is Vega.

Above Lyra, though not containing any first magnitude stars, is Hercules. To the south of Hercules is Ophiuchus, the serpent bearer, while to the north is the head of Draco, the dragon. The tail of this beast wraps around the north pole, passing between parts of the large and small bears. Below Draco, in the north, is Cepheus, the king, and below him the well-known W-shaped group of stars that forms Cassiopeia, the lady in the chair. In the early evening now, Capella, in Auriga, the charioteer, and Pollux, the brighter of the twins, Gemini, can still be seen low in the northwest, the last remnants of the winter constellations.

Mentioned in the Bible

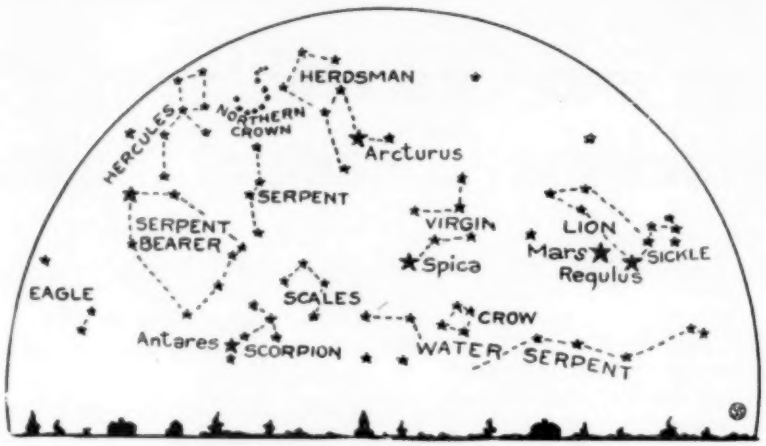
Let us look at Arcturus for a moment, as it shines high overhead, at the bottom of the kite-shaped constellation of Bootes, the wagoner, or the ploughman, as it is sometimes called. Arcturus, incidentally, is mentioned in the Bible, in Job 38:32. However, there is some confusion, as the name was also applied in past times to the Great Bear, and the biblical reference, "Canst thou guide Arcturus with his sons?" probably refers to Ursa Major. The revised version of the Bible renders it "the bear."

Omitting the sun, which is just as much a star as any, Arcturus is the fourth brightest that can be seen from middle latitudes in the United States. Sirius, the dog-star, is the brightest, then comes Vega, now shining in the east and marking the group of Lyra, then Capella, and Arcturus follows with only slightly inferior brilliance. It is rather reddish in color, though not as conspicuously so as Antares, while Vega is distinctly blue. Measures of its distance show that Arcturus is 41 light

WITH WINGS OUTSTRETCHED

The graceful swan was chosen by the ancients to represent the group of stars also known as the Northern Cross.

years away—41 times the six million miles that a beam of light travels in a year—but great as this seems, it is one of the closest stars in the sky. Knowing its distance as well as its apparent brightness it is possible to calculate its actual brightness, or "candlepower." This proves to be 112 times as much as the sun. Also, Arcturus is one of the few stars of which the diameter has been measured by means of the interferometer. Thus it has been found that it is 23 million miles in diameter, 26.6 times the size of the sun. Its volume is, therefore, about 25,000 times that of the sun, but it is only four times as massive, so that it is vastly more diffuse, a great globe of nothingness.



THE SOUTHERN EVENING SKIES

Contain many of the beautiful constellations which are the familiar attendants of balmy summer evenings.

Constellations Changing

We speak of the "fixed stars" as separate from the planets, which wander around the sky, but actually this is only relatively correct. Though they seem to move much more slowly than the planets, because of their vastly greater distances, the stars are all speeding through space, with the result that the present constellation figures are only temporary. Within a few thousand years they will be appreciably different from their present arrangements, and by the time 50,000 years have elapsed, a very short time in the history of the universe, they would be quite unrecognizable to us. Our own sun is going along with the others. Every second it has advanced twelve miles.

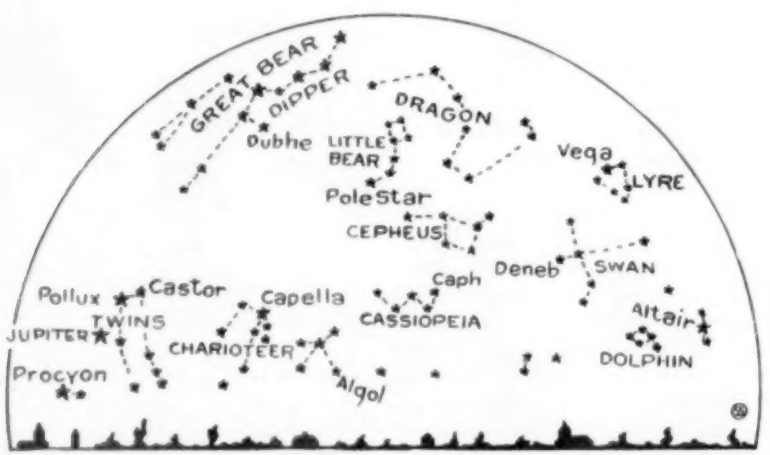
The English astronomer Halley, best known, perhaps, from the comet that bears his name, was the first to show that the stars are moving. In the year 1718 he announced, as a result of studying contemporary observations with ancient records, that Sirius, Procyon and Arcturus had changed their position within historic times. Modern research shows that Arcturus is going along at the rate of 77 miles a second. This is the most rapid speed of all the bright stars we can see, but the record speed is more than 600 miles a second.

With so many stars, moving more or less promiscuously at such speeds, it might seem that the traffic problems would be great, and that interstellar space must be something like Times Square without any policemen to regulate it. True enough, two stars may hit, but such a catastrophe would be exceedingly rare and nearly as infrequent would be the close approach of two stars, such as that which apparently brought the solar system into existence, when a passing star pulled out of the sun the stuff which later formed the planets. Of course, the reason is found in the sparseness of the stars. In his recent book, "The Stars in Their Courses," Sir James Jeans has given a vivid picture of the emptiness of space. "Leave only three wasps alive in the whole of Europe," he says, "and the air of Europe will still be more crowded with wasps than space is with stars, at any rate in those parts of the universe with which we are acquainted."

In addition to the stars visible next month, three planets are to be seen during the evening. Jupiter, which has been so conspicuous in recent months, is in the constellation of Gemini, low in the northwestern sky, where its brightness makes it apparent in the early part of the evening. Higher, in Leo, is Mars. In the middle of June, it will set about four hours after the sun. Saturn is the most conspicuous of the planets now to be seen. It rises about two hours after the sun sets, and is in the constellation of Sagittarius, the Archer, the zodiacal constellation next to Scorpio. By two o'clock it is directly south. Saturn is not indicated on the map.

One particularly interesting event of June occurs at 4:28 A. M., eastern standard time, on Monday, the twenty-second. That is the time when the sun enters the sign of Cancer, the crab, which marks the beginning of summer. This is the summer solstice, when the sun is farthest north in the sky, and the day longest and the night shortest.

During June, the moon is at last quarter on Monday, the eighth, new on Monday, the fifteenth, at first quarter on Monday, the twenty-second, and full on Monday, the twenty-ninth. Thus, the last ten or twelve days of the month will have bright moonlight evenings.



THE SWAN OF THE HEAVENS

May be located with the aid of this map of the northern skies.

PSYCHOLOGY

Effect of Movies Measured Scientifically

Attitude Test Given to Children Before and After Showing of Films Shows How Much They are Influenced

A TEST which can be used to measure scientifically the changes of attitude produced in children by any particular motion picture film, was described in a report to the Midwestern Psychological Association by its president, Dr. L. L. Thurstone, of the University of Chicago.

The test has been used, for example, to determine the actual effect of a picture which has been criticized as unfriendly to the Chinese.

When it is desired to test attitude toward nationalities, a list of twenty nationalities is presented to a group of students. The nationalities are arranged in pairs so that every nationality is paired with every other one in the list. The student answers, for each pair, the question, "Which would you rather associate with?"

By combining all the answers it is possible to draw up a scale showing for that group the average preference for, or prejudice against, each of the nationalities. As might be expected, in Dr. Thurstone's experiments, Americans came out at the top of the list, other English-speaking peoples came next, and races other than our own fell to the bottom.

The effect of witnessing a film is found by giving this test just before the film is shown and again afterward. Dr. Thurstone found that a dramatic film will cause a decided shift in attitude toward a particular race or nationality. The change in attitude may continue undiminished for several months or it may return part way toward its original state.

A similar method is used for measuring attitude toward crimes or ideals or principles. In the test for crimes, the question is revised to read, "Which do you consider the more serious?" Children have come to regard gambling as much more serious after seeing a motion picture playing up the evils of this crime.

Dr. Thurstone warns against the use of this test for the elimination from college or elsewhere of persons with attitudes considered undesirable.

"In the first place, you would immediately make liars of many applicants who differ with you in their political or religious convictions . . . .," he said. "But even if it were possible to ascertain the political and religious attitudes of people under conditions which would detect when they are lying, it would be a vicious policy for any educational institution to adopt."

Dr. Thurstone referred particularly to a case where several boys were reported to have been denied graduation from high school because of political beliefs.

"The stupid psychology of those school authorities can hardly be calculated to make those boys change their political convictions. If ignored they might change their minds many times before reaching mature years. But it is startling to hear that an adolescent can be refused graduation from a public educational institution because of his political beliefs . . . . I sincerely hope that none of the attitude scales that we have developed will be put to such vicious purposes."

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IVORY, PEARLS AND GARNETS

Are the materials of this historic cup which sold recently for $55,000.

ARCHAEOLOGY

Historic Cup Sold At London Auction

A CUP FIT for a king, which many antiquarians believe to have been the private drinking cup of the twelfth century martyr-saint Thomas à Becket, was sold at auction May 12, from the estate of the Duke of Norfolk, Earl Marshal and Hereditary Marshal of England. It was purchased by Lord Wakefield for $55,000 in behalf of his nation and will be given, it is understood, to the Victoria and Albert Museum.

The cup stands over twelve inches tall. It is made of ivory and has an ivory cover. Both cup and cover are richly mounted with silver-gilt and studded with pearls and garnets.

It has been known as the "Thomas à Becket Cup" on the supposition that it was the property of the murdered Archbishop of Canterbury, Saint Thomas. In support of this argument are the initials TB engraved on a silver band on the ivory cover, and with the initials an engraved mitre. A cup described as St. Thomas cup was willed to Queen Catherine of Aragon, first wife of Henry the Eighth, by Sir Edward Howard, and it is considered possible that this was the same cup. After Thomas à Becket's death, objects associated with him were venerated and preserved, and the suggestion has been made that Queen Catherine accepted the fine ivory cup as a relic of St. Thomas and added the sumptuous mounting at that time.

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ASTRONOMY

Greatest Double Star Measured by Canadian

THE GREATEST double star yet measured, 184 times as massive as the sun, was described before the joint meeting of the Royal Society of Canada and the Royal Astronomical Society in Toronto last week by Dr. J. A. Pierce, astronomer at the Dominion Astrophysical Observatory at Victoria, B. C. Dr. Pierce's results were obtained with the collaboration of Dr. J. S. Plaskett, director of the observatory where he worked.

The star was first recorded at the great observatory at Mt. Wilson, Calif., between 1920 and 1924, when preliminary spectroscopic observations were made on it. Further investigations of the star fitted into the research program of the Victoria observatory, and today's announcement is the result of spectroscopic and other photographs made with the 72-inch reflecting telescope there.

Like all double stars, the newly-measured giant consists of two great glowing spheres, instead of a single one like our sun. These constantly circle round each other, the period for the full circuit in the present case being 56 days. The two component spheres are of unequal size, one being 134 times as massive as the sun, the other only 50.

The star is receding from the part of the universe we are in at the rate of nearly five miles a second.

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MEDICINE

Better Meningitis Treatment Promised by New Toxins

STEPS toward the possible improvement in the treatment of acute spinal meningitis were made known to the scientific world when Dr. Newell S. Ferry of the research department of Parke, Davis and Company, Detroit, reported his latest research to the American Association of Immunologists and American Association of Pathologists and Bacteriologists.

The four types of meningococcus, the organisms causing this form of meningitis, were studied by Dr. Ferry. He discovered that contrary to the prevailing notion each of these four types of the organism produces a soluble or true toxin specific to each type as well as a soluble toxin common to all types.

As these toxins are released into the culture media in which the bacteria are growing, it is thought possible also that during the disease they are released into the body, giving rise to some of the more severe symptoms which heretofore have not been controlled by the ordinary antimeningococcus sera.

It was found also that these toxins are capable of producing specific antitoxins which will neutralize the toxins and hope is entertained that in this way a more effectual treatment may be the outcome of the work.

As yet the antitoxic properties of this serum have been tested only on the animal. No human cases have been treated.

Science News Letter, May 30, 1931

GEOLOGY

Engineers Unearth History of Lake Superior

LAKE SUPERIOR is now the shrunken remainder of a larger Lake Algonquin that was left in the same area by the melting ice of the great Ice Ages, it has been proved by excavations for a dam of the Algoma District Power Company, on the Michipicoten river that empties into northeastern Lake Superior.

Dr. E. S. Moore, geologist of the University of Toronto, told the Royal Society of Canada at its recent meeting that his examination of this engineering work confirms the geological idea that there was a much larger prehistoric lake filling the Superior basin.

As he followed the ups and downs of the geological history of this most northern of the Great Lakes, Dr. Moore found also that during the glacial era there was a smaller lake where Lake Superior now lies.

The power company engineers sinking shafts for the dam at High Falls on the Michipicoten found a natural dump or pre-glacial valley filled with sand, gravel and silt and other glacial debris.

Science News Letter, May 30, 1931

METEOROLOGY

Mirage Shows Ship Turned Upside Down

A REMARKABLE mirage prevailed recently off the Carolina coast, the U. S. Hydrographic Bulletin reports. It caused the Diamond Shoal lightship to appear upside down, and also played weird tricks with passing ships, causing them to disappear and reappear with great suddenness and distorting their outlines in most fantastic fashion.

Science News Letter, May 30, 1931

IN SCIENCE

ARCHAEOLOGY

Expedition Reaches Tomb Of Haroun-al-Rashid

THE SACRED CITY of Meshed, in northeast Persia, has been reached over flooded, mud-washed roads, by the seven tractor cars of the Trans-Asia Expedition led by Georges-Marie Haardt, the National Geographic Society has been advised by radio dispatches.

Meshed is a sacred city of the Moslem world because it contains the tomb of Imam Riza, one of the great leaders of Mohammedanism in Persia. Riza is believed by many people to have been poisoned. Hence the name Meshed, which means "place of martyrdom." Beneath the tomb of Riza is buried Haroun-al-Rashid, caliph of "Arabian Nights" fame.

The hundred mile journey toward the Afghanistan border, one of the most arduous sectors, has just started. The goal of this stage of the expedition will be Herat, in western Afghanistan. In the middle ages, Herat was a city of some half a million people, when the Mongol conqueror Genghis Khan swept down upon it and left less than a hundred alive. Less than two hundred years later, Tamerlane attacked the city again, almost annihilating it.

Science News Letter, May 30, 1931

ENGINEERING

German Inventor Devises Flexible Steel Railroad Tie

A STEEL railroad tie that gets away from the disadvantage of rigidity that handicaps most metal ties and still retains its advantages of strength and permanence, has been devised by a German inventor. It consists of a tube of approximately elliptical cross-section, slotted along its lower side. This slot allows a certain amount of "give" when a load passes over. It is intended to fill the hollow interior with ballast material, to give the track greater stability. The ties will be prevented from side-slipping on curves by stopping the ends with steel plates.

Science News Letter, May 30, 1931

NCE FIELDS

ASTROPHYSICS

Fire Interrupts Study Of Solar Constant

FIRE destroyed the computing room of the Smithsonian Institution Astrophysical Observatory station on Montezuma Mountain, Chile, and as a result the study of the sun's radiation conducted by observers there will be delayed slightly.

Each day on that mountain peak, nearly 9,000 feet above sea level, two scientists measure the radiation of the sun, and cable the results to Dr. C. G. Abbot and his associates of the Smithsonian Institution at Washington, D. C. The solar constant so determined is distributed to scientists throughout the world by radio and promises to be a fundamental "inconstant" of nature, of use in making long-range weather forecasts.

The fire loss just reported to Washington by Clay P. Butler, director, and Walter Watson, Jr., assistant, did not affect the actual observing instruments but the loss of charts and records will prevent computation of the daily cable for about two weeks.

Science News Letter, May 30, 1931

PHYSIOLOGY

Study Shows Sunlight Increases Nutrition

STUDIES showing how sunlight increases the nutrition of the human body have just been reported to Science by W. W. Lepeschkin of the Desert Sanitorium and Institute of Research at Tucson, Ariz.

Mr. Lepeschkin studied the action of sunlight on red blood cells. When these cells are suspended in a salt solution and exposed to direct sunlight, they gradually disintegrate and are destroyed. Their resistance to poisons is very much reduced. Only the visible rays of the sunlight reduce this resistance, however. Ultraviolet rays, if they are weak or act for a short time, increase the resistance of the red cells and protect them against the harmful effect of visible rays, Mr. Lepeschkin found.

Visible rays of sunlight affect red blood cells in another way. Cells that have been exposed to this light are more permeable to water-soluble substances. Such irradiated corpuscles can take up increased quantities of sugar, the experiments showed.

"It may therefore be assumed that the nutrition of red cells is enhanced by sunlight," Mr. Lepeschkin concluded. "As the chemical and physical structure of red corpuscles is similar to that of colorless cells, the results obtained on red corpuscles can be extended to all cells of our organism, and it is likely that sunlight increases the nutrition of our organism in general."

Science News Letter, May 30, 1931

BACTERIOLOGY

Orchard Disease Found Hiding in Beehives

BEES HAVE been proved foes as well as friends of orchards, by researches recently brought to a climax by Dr. H. R. Rosen of the University of Arkansas. He has found the bacteria that cause fire blight, an exceedingly destructive disease in apple and pear orchards, are carried home by bees and that the infection is thus kept warm and alive over winter in the hives, ready for re-distribution in spring.

The theory that the disease is spread by the organism over-wintering in the tree itself is discarded by Dr. Rosen. He sought for the bacteria in the sap that oozes out of the injured places on the branches, and found only one canker containing them. In general, these oozing spots were not found to appear in spring until the bees were in flight. Although the bacteria can over-winter in injured tissue, Dr. Rosen found no evidence that they caused outbreaks of fire blight in the spring.

The theory that fire blight outbreaks are due to bacteria over-wintering in the wood has been responsible for the methods used for combating the disease. At present injured places on the branches are cut out or pruned away before the development of new spring growth.

Dr. Rosen's work has shown this method to be quite useless. The way to stop fire blight is to make sure there is no infection in the bee-hives which must be maintained to insure the proper pollenation of the flowers. He is at present working on methods for detecting the presence of the bacteria in the hives and for removing the infection when found.

Science News Letter, May 30, 1931

ASTRONOMY

Comet Seen at 588 Million Miles Promises New Record

OBSERVATIONS made at the Yerkes Observatory, Williams Bay, Wis., recently of a comet at the great distance of 588,000,000 miles, or about 6.33 times the distance of the sun from the earth, have given astronomers ground for thinking that it will be observed completely around its orbit, and that it will return to the neighborhood of the sun without ever having been out of sight. The ordinary comet, like Halley's, is only visible near perihelion, the time of close approach to the sun. As it leaves this region of the solar system it disappears from view, possibly to be picked up on its next trip.

A study of the Schwassmann-Wachmann comet, discovered last winter by two German astronomers, indicates that it will probably establish this new record, Dr. George Van Biesbroeck, of the Yerkes Observatory, has announced. When first photographed, on December 16, it was of the sixteenth magnitude, far too faint to be visible to the naked eye. A second photograph, made on February 11, showed that it had brightened to the twelfth magnitude, which is also much below naked eye visibility. A month later it was again of the sixteenth magnitude. It is now so far away that it will probably not become greatly fainter. Only about two years will elapse before it reaches aphelion, the point of greatest distance from the sun. If seen until then, it should be possible to keep it under observation until its next return. Dr. Van Biesbroeck thinks that this will happen.

Science News Letter, May 30, 1931

ENGINEERING

Booster Aids in Handling Of Bulk Materials

BY FIXING a resilient high carbon steel plate to the end of a coal chute, Charles G. States, a miner of Cedaredge, Colo., has made an ingenious device that deflects a stream of coal and piles it several feet from the end of the chute. A patent has been granted for the invention, which is called the States booster.

It is expected that the booster will improve the efficiency of handling other bulk material such as corn and wheat and decrease the resistance of air rounding corners in ventilating shafts.

Science News Letter, May 30, 1931

ARCHAEOLOGY

Human-Headed Lions of Nineveh

"A Classic Of Science"

Sculptures Discovered Less Than a Century Ago at the Site of the City Xenophon Knew Only as an Ancient Ruin

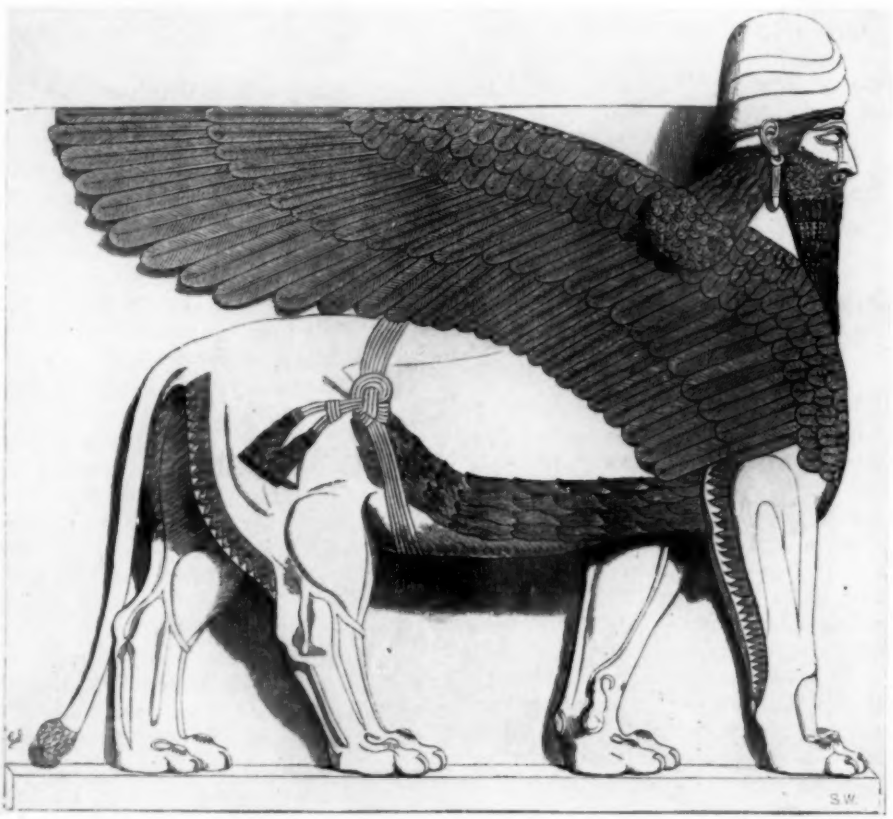
NINEVEH and its Remains: with an Account of a Visit to the Chaldean Christians of Kurdistan and the Yezidis, or Devil-Worshippers; and an Enquiry into the Manners and Arts of the Ancient Assyrians. By Austen Henry Layard. London: John Murray, 1849.

ON THE MORNING following these discoveries I rode to the encampment of Sheikh Abd-ur-rahman, and was returning to the mound when I saw two Arabs of his tribe urging their mares to the top of their speed. On approaching me they stopped. "Hasten, O Bey," exclaimed one of them—"hasten to the diggers, for they have found Nimrod himself. Wallah, it is wonderful, but it is true! we have seen him with our eyes. There is no God but God"; and both joining in this pious exclamation, they galloped off, without further words, in the direction of their tents.

On reaching the ruins I descended into the new trench, and found the workmen, who had already seen me, as I approached, standing near a heap of baskets and cloaks. Whilst Awad advanced, and asked for a present to celebrate the occasion, the Arabs withdrew the screen they had hastily constructed, and disclosed an enormous human head sculptured in full out of the alabaster of the country. They had uncovered the upper part of a figure, the remainder of which was still buried in the earth. I saw at once that the head must belong to a winged lion or bull, similar to those of Khorsabad and Persepolis. It was in admirable preservation. The expression was calm, yet majestic, and the outline of the features showed a freedom and knowledge of art, scarcely to be looked for in the works of so remote a period. The cap had three horns, and, unlike that of the human-headed bulls hitherto found in Assyria, was rounded and without ornament at the top.

I was not surprised that the Arabs had been amazed and terrified at this apparition. It required no stretch of imagination to conjure up the most strange fancies. This gigantic head, blanched with age, thus rising from the bowels of the earth, might well have belonged to one of those fearful beings which are pictured in the traditions of the country, as appearing to mortals, slowly ascending from the regions below. One of the workmen, on catching the first glimpse of the monster, had thrown down his basket and had run off towards Mosul as fast as his legs could carry him. I learned this with regret as I anticipated the consequences.

Whilst I was superintending the removal of the earth, which still clung to the sculpture, and giving directions for the continuation of the work, a noise of horsemen was heard, and presently Abd-ur-rahman, followed by half his tribe, appeared on the edge of the trench. As soon as the two Arabs had reached the tents, and published the wonders they had seen, every one mounted his mare and rode to the mound to satisfy himself of the truth of these inconceivable reports. When they beheld the head they all cried together, "There is no God but God, and Mohammed is his Prophet!" It was some time before the Sheikh could be prevailed upon to descend into the pit, and convince himself that the image he saw was of stone. "This is not the work of men's hands," exclaimed he, "but of those infidel giants of whom the Prophet—peace be with him!—has said



Layard's Nineveh

WINGED HUMAN-HEADED LION

One of a pair which guarded the portals of a palace door in Nineveh when Assyria and Egypt were world powers. Layard believed the man's head typified the intelligence, the lion's body the strength, and the eagle's wings the omnipresence of the god.

that they were higher than the tallest date tree; this is one of the idols which Noah—peace be with him!—cursed before the flood." In this opinion, the result of a careful examination, all the bystanders concurred.

I now ordered a trench to be dug due south from the head, in the expectation of finding a corresponding figure, and before nightfall reached the object of my search about twelve feet distant. Engaging two or three men to sleep near the sculptures, I returned to the village, and celebrated the day's discovery by a slaughter of sheep, of which all the Arabs near partook. As some wandering musicians chanced to be at Selamiyah, I sent for them, and dances were kept up during the greater part of the night. On the following morning Arabs from the other side of the Tigris, and the inhabitants of the surrounding villages, congregated on the mound. Even the women could not repress their curiosity, and came in crowds, with their children, from afar. My Cawass was stationed during the day in the trench, into which I would not allow the multitude to descend. . . .

I ascertained by the end of March the existence of a second pair of winged human-headed lions, differing from those previously discovered in form, the human shape being continued to the waist, and furnished with arms. In one hand each figure carried a goat or stag, and in the other, which hung down by the side, a branch with three flowers. They formed a northern entrance into the chamber of which the lions previously described were the western portal. I completely uncovered the latter, and found them to be entire. They were about twelve feet in height, and the same number in length. The body and limbs were admirably portrayed *(sic)*; the muscles and bones, although strongly developed to display the strength of the animal, showed at the same time a correct knowledge of its anatomy and form. Expanded wings sprang from the shoulder and spread over the back; a knotted girdle, ending in tassels, encircled the loins. These sculptures, forming an entrance, were partly in full and partly in relief. The head and fore-part, facing the chamber, were in full; but only one side of the rest of the slab was sculptured, the back being placed against the wall of sun-dried bricks. That the spectator might have both a perfect front and side view of the figures, they were furnished with five legs; two were carved on the end of the slab to face the chamber, and three on the side. The relief of the body and three limbs was high and bold, and the slab was covered, in all parts not occupied by the image, with inscriptions in the cuneiform character. These magnificent specimens of Assyrian art were in perfect preservation; the most minute lines in the details of the wings and in the ornaments had been retained with their original freshness. Not a character was wanting in the inscriptions.

Symbol of Supreme Being

I used to contemplate for hours these mysterious emblems, and muse over their intent and history. What more noble forms could have ushered the people into the temple of their gods? What more sublime images could have been borrowed from nature by men who sought, unaided by the light of revealed religion, to embody their conception of the wisdom, power, and ubiquity of a Supreme Being? They could find no better type of intellect and knowledge than the head of the man; of strength, than the body of the lion; of ubiquity, than the wings of the bird. These winged human-headed lions were not idle creations, the offspring of mere fancy; their meaning was written upon them. They had awed and instructed races which flourished 3000 years ago. Through the portals which they guarded, kings, priests, and warriors had borne sacrifices to their altars, long before the wisdom of the East had penetrated to Greece, and had furnished its mythology with symbols long recognized by the Assyrian votaries. They may have been buried, and their existence may have been unknown, before the founding of the eternal city. For twenty-five centuries they had been hidden from the eye of man, and they now stood forth once more in their ancient majesty. But how changed was the scene around them. The luxury and civilization of a mighty nation had given place to the wretchedness and ignorance of a few half-barbarous tribes. The wealth of temples, and the riches of great cities, had been succeeded by ruins and shapeless heaps of earth. Above the spacious hall in which they stood, the plough had passed and the corn now waved. Egypt has monuments no less ancient and no less wonderful; but they have stood forth for ages to testify her early power and renown; whilst those before me had but now appeared to bear witness, in the words of the prophet, that once "the Assyrian was a cedar in Lebanon with fair branches and with a shadowing shroud of a high stature; and his top was among the thick boughs . . . his height was exalted above all the trees of the field, and his boughs were multiplied, and his branches became long, because of the multitude of waters when he shot forth. All the fowls of heaven made their nests in his boughs, and under his branches did all the beasts of the fields bring forth their young, and under his shadow dwelt all great nations"; for now is "Nineveh a desolation and dry like a wilderness, and flocks lie down in the midst of her: all the beasts of the nations, both the cormorant and bittern, lodge in the upper lintels of it; their voice sings in the windows; and desolation is in the thresholds" *(Ezekiel, xxxi, 3, etc.; Zephaniah, ii, 13 and 14.)*

Layard's Nineveh

DISCOVERY OF THE GIGANTIC HEAD

The natives believed the statue to be of Nimrod, the mighty hunter, an early King of Assyria and traditionally the founder of the city of Nineveh.

THE NEXT CLASSIC OF SCIENCE

will give

Van 't Hoff's

explanation of how the arrangement of atoms in space affects crystal forms and optical properties of organic compounds.

PHYSICS

Behavior of Electron Is Not Predictable

Physicist Explains Theory That the Law of Cause and Effect Does Not Apply to Motion of Single Particles

HOW SCIENCE is losing faith in the law of cause and effect was explained in an address at the University of Wisconsin by Prof. P. W. Bridgman of Harvard University.

New experimental facts in the last few years, Prof. Bridgman said, have made us less certain as to the thoroughgoing uniformity of nature or the predictability of future events. When we refine our measurements beyond a certain point we enter a new domain of small things not before accessible, full of the most capricious irregularities. The new domain is that in which the motions of single electrons or atoms are concerned.

"Let us imagine the simplest large-scale situation, a billiard ball rolling without friction or other interference on a table-top. Let us imagine the table-top marked with lines a foot apart," Prof. Bridgman continued. "Then we all know that if we observe the ball to be at the zero mark when the second hand of our watch points to zero, and to be at the one-foot mark when the second hand points to one second, when the second hand points to two seconds we shall find the ball at the two-foot mark. . . . .

"But experiment shows that if we were dealing with an electron instead of a billiard ball the experiment would entirely fail . . . . . At two seconds we might sometimes find it at seven feet and sometimes at five feet, . . . and indeed sometimes at two feet, like the billiard ball."

Prof. Bridgman went on to discuss the question of whether there could ever be any practical effects arising from such small-scale uncertainties. An example of this sort of thing is known to every physicist in an apparatus so constructed that the effect of the entrance of a single electron into the sensitive part of the apparatus is amplified with vacuum tubes so as give a crack of sound in a loud speaker or start or stop a piece of machinery.

"We may," he continued, "romance about the future religion of a superstitious race by imagining in the inmost shrine of their temple a speck of radioactive salt in process of disintegration, and attached to this a train of vacuum tube amplifiers, which shall ever and anon flood the temple with light, or beat a tom-tom, or perhaps sacrifice a victim."

The disintegration of such an atom, Prof. Bridgman said, is the sort of thing that experiment and theory both show is essentially unpredictable.

"A rather good argument might be made for this sort of thing," he went on, "and it really appeals to the imagination in many ways, for we have here the possibility of a spectacular projection into the realm of ordinary sense of the eternally inscrutable foundations of our physical world . . . . .

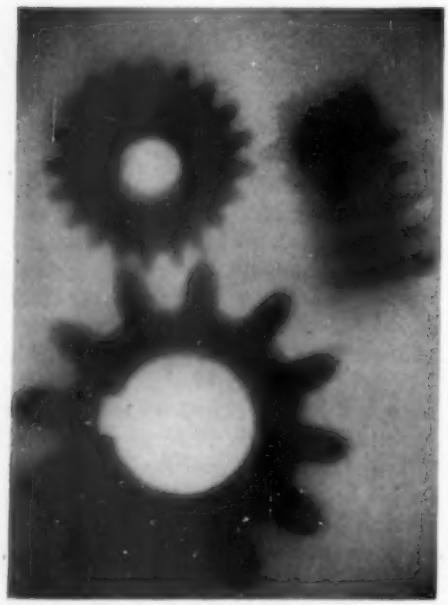
"I gather the impression that at the present time a number of biologists are prepared to admit that not infrequently the adjustment of a single cell may be so delicate as to be thrown out of balance and a reaction started by the entrance of a single free electron or light corpuscle into the cell. In such cases the behavior of the cell must be admitted to be unpredictable."

The notion of cause is not so simple as it seems. Suppose that one had a heavy weight attached to a support by a string; then he will find that whenever he cuts the string the weight falls. This would lead to the assertion that the cause of the falling of the weight was the cutting of the string.

"For instance," Prof. Bridgman concluded, "if I could by some heroic means remove the earth, then we are all convinced that the weight would no longer fall when the string is cut, and so we could justify the contention that the true cause of the falling of the weight was not the cutting of the string but the presence of the earth."

Prof. Bridgman's address is reported in full in *Science*.

Science News Letter, May 30, 1931



THROUGH FOUR INCHES OF IRON

By the aid of a powerful 800,000-volt X-ray apparatus. This photograph was made in only 30 seconds, although even the most powerful of tubes in commercial use would require several hours of exposure. The images are not clear because this new tube is not intended for photography but for therapeutic use by the Memorial Hospital in New York City.

METEOROLOGY

Britain Has Few Natural Fogs

THE prevalent belief that England is a land of perpetual fog has been disproved by the National Physical Laboratory at Teddington, which reports that investigations carried out to determine the water in fogs for the Atmospheric Pollution Research Committee were much hampered in the early stages by the infrequency of the opportunities for work to be carried out on natural fogs. Apparatus for producing an artificial fog had to be constructed, a small chamber being equipped with an air-circulating apparatus supplied with steam from a generator outside.

How the formation of fog depends on the presence of solid particles in the air is shown by the fact that after the fog had been produced continuously for from ten to fifteen minutes it thinned, owing to lack of nuclei for the formation of the droplets. However, if a little smoke, obtained from smouldering sacking placed near the intake of the circulating system, was added it was possible to produce continuously dense fog, although the smoke alone, in the absence of the steam supply, was hardly visible.

Science News Letter, May 30, 1931

PHYSICS

More Facts On Free Electrons Yielded By Quantum Theory

Roving Particles, Which Give Metals Characteristic Properties, Have Been Registered by Quantum Numbers

SCIENCE now believes that the electrons in a piece of cold metal are more active and sociable than formerly but current theories make it still as difficult for an electron to get a passport to the foreign air beyond the metal's boundaries.

Dr. Charles E. Mendenhall of the University of Wisconsin has presented to physicists an interesting picture of the changes in the behavior of the free or roaming electrons in metals, which has been brought about by the revolutionary discoveries of the new quantum theory. It is to the electrons of this kind that the most characteristic properties of metals are due, notably their reflecting surface and the ease with which they conduct electricity and heat.

Formerly there was no check on the activities of the individual electrons of this family. They were all vagrants. The new statistical theories of Heisenberg, Shroedinger and Dirac change all this. Each electron is now registered in the census of the mathematical physicist, by a series of tags known as "quantum numbers."

Further, an edict known as Pauli's principle now decrees that a given series of number tags can belong to, at most, only two electrons. We can regard this series of numbers as the address of the electron in the phantom city of the physicist's imagination. Dr. Mendenhall describes this principle as "social legislation to prevent overcrowding of the electrons," an admirable contribution to electron welfare.

Quantum City must be rather dull, however, if it contains nothing but two-room apartments. And physicists used to refer to "free" electrons!

There are two ways in which the electrons can escape from their neatly arranged homes in the metal: first, by the action of heat; second, by the falling of a beam of light on the surface.

It is with light that Dr. Mendenhall's experiments have been concerned. This so-called photo-electric effect has played a very important part in reviving Sir Isaac Newton's idea that light consists of particles rather than waves.

Only a few electrons, those that have much more energy than the rest, have the privilege of escaping from the metal when the artificial sun of the experimenter comes out. A wall of force known as the "work function" keeps all but a few within the city limits.

The changes introduced by the new theory of metals, due to Prof. Arnold Sommerfeld, might be compared to the effects of the industrial revolution. The average energy, or wealth, of the floating electron population is now believed to be much higher than formerly. It is this energy that enables an electron to get around and do things and to escape from the metal from time to time.

Prof. Sommerfeld seems at first to have done an excellent thing. It turns out, however, that the disobliging wall of force has increased under the new regime to just the same degree as the average energy, and it is just as troublesome as before for an ambitious electron to break through the surface of the metal and cavort before the waiting experimenter.

Dr. Mendenhall says this is a "protectionist trick by which wages are increased but prices go up correspondingly." These effects, however, influence the electrons on the surface, that is in the first thousand or ten thousand layers of atoms.

Dr. Mendenhall's recent experiments have helped check the application to metals of this new quantum theory, which scientists believe is of much more immediate importance than Einstein's relativity theory.

Science News Letter, May 30, 1931

Cases of sunstroke sometimes occur in Alaska.

Government scientists have found that there is less wind resistance in an open automobile when the top and the windshield are up than when they are down.

QUARTERLY JOURNAL SCIENCE RELIGION PHILOSOPHY

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ORNITHOLOGY

Bird Life of Florida Little Changed Since Ice Age

FLORIDA winter residents who watch with wonder and admiration the beauty and grace of Florida birds are unconsciously paying tribute to the descendants of a race of Florida tourists who found that semi-tropical peninsula a good land to dwell in during a winter much longer than the ones we know today. For during scores of thousands of years of the later Ice Age, when the whole of eastern North America groaned under a Greenland-like burden of glaciers as far south as the Ohio river and the prairies of Iowa and Nebraska, the bird population of Florida was essentially the same as it is today.

This fact has developed from studies by Dr. Alexander Wetmore of the U. S. National Museum, which he has just rounded up into finished manuscript form. They will appear as a technical publication some time in the near future.

Fossils of bird bones from half a dozen localities in central Florida have been identified, yielding a total bird fauna to date of sixty-five forms. All but three of them are of birds still living; and of the sixty-two species and varieties all but nine are still to be found in Florida, either breeding there or as winter migrants. These include such striking and beautiful birds as white ibis, egret, snakebird and black duck.

Included in the nine still living but not now known in Florida are the rare trumpeter swan, the almost extinct whooping crane and the jabiru stork. The three extinct species comprise one teal, one turkey and a great condor-like bird. Twenty-six of the sixty-five Florida fossil birds have not previously been known as fossils.

Because of the smallness and delicacy of their bones, bird remains do not fossilize as well as those of larger animals. Until the Florida finds began to come in, sent by several collaborating collectors, practically all American bird fossils were from various parts of the West.

So far, one hundred forty living North American birds are known also as fossils, the list representing about fifteen per cent. of existing North American species.

Science News Letter, May 30, 1931

Alaskan whaling stations still make an annual catch of 300 to 400 whales.

Government tests show that banana powder made from fresh, raw bananas is a good source of vitamins B and G.

Amplifiers are being tried in some court rooms, to insure that the words of weak-voiced witnesses will carry across to the jury.

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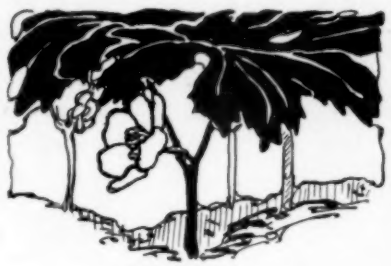
BOTANY

Nature Ramblings

By FRANK THONE



May-Apple

THE waxy white flowers hidden under the broad leaves of the May-apple are beginning to give place to the round, fleshy little fruits. Shortly children will be making a second pilgrimage to the wide patches this plant forms in the open woods, to gather in the yellow "lemons"—provided the raccoons have not been there first. The May-apple is sometimes called "raccoon apple."

These great, spreading patches of May-apple usually start from a single plant. They are indeed, strictly speaking, single plants. For if one digs carefully among the stems, one finds that they are all connected by means of endlessly rambling, branching rootstocks or thickened underground stems, which burrow about through the soil, constantly enlarging the domain of the patch.

The May-apple is known also as the American mandrake; its root yields a bitter cathartic principle known as podophyllin, much used in medicine. It is not to be confused with the European mandrake, which belongs to an entirely separate plant family, being kin to the potato and nightshade, whereas the American mandrake is related to the barberry.

It is the European mandrake which gives rise to the odd, oldtime superstition that its forked root, shaped roughly like a man's body, shrieked aloud when pulled up, and that whoever heard its cry must certainly perish. Hence the old herb-gatherers' books directed that it must be pulled up by a cord tied to a dog's collar, while the dog's owner remained safely out of earshot.

Science News Letter, May 30, 1931

Italy's net increase in population is now about 450,000 a year.

GENETICS

Longevity is Inherited From Long-Lived Parents

OLIVER WENDELL HOLMES' advice to "advertise for a couple of parents both belonging to long-lived families" in order to live to a ripe old age has been tested actuarially by Dr. Raymond Pearl and his associates in the department of biology of the School of Hygiene and Public Health of Johns Hopkins University.

He finds that longevity is inherited and that there are scientific grounds for the widely prevalent idea that length of days tends to run in families. Preliminary results of his extensive studies of the inheritance of longevity are reported in the current issue of Human Biology and they promise to cause geneticists to consider length of life as much an inheritable family trait as color of eye, shape of head, form of nose or other physical features.

Thousands of Records

Thousands of family history records collected by Dr. Pearl's department were used in the investigation. Using methods by which life insurance companies determine the life tables upon which they base their rates, Dr. Pearl reports, "that the expectation of life of sons of fathers dying or living at 80 or over years of age, is greater at all ages from birth on, than the expectation of life of sons of fathers dying at ages between 50 and 79 years inclusive, and is still greater than the expectation of life of sons of fathers dying under 50 years of age."

In order to establish still more soundly the conclusions, Dr. Pearl also studied the expectation of life of parents of long-lived sons and daughters in comparison with the expectation of life of parents of short-lived sons and daughters. Many other similar actuarial comparisons were made.

Parents of children dying at 50 years or over live longer by 7 to 28 per cent. than parents of children who die under 50 years of age. Grandparents whose children live to over 50 years of age themselves by the life tables have lifetimes 7 to 59 per cent. longer than the grandparents with shorter lived children.

Over half a million years of life were contained in the records upon which the studies were based. Extensive pedigrees of over 100,000 members of white Baltimore families were available for the study, each record of which was obtained by a trained field worker

Science News Letter, May 30, 1931

ENTOMOLOGY

"Fifty-Fifty" Mosquito Reared In England

A MOSQUITO that is neither male nor female, but shows a grand jumble of characters belonging to both sexes, has been reared at the British Mosquito Control Institute. Its abdomen is typically female, but its "feelers" are male. The mouthparts are those of a male except for one fully developed maxilla. The left wing is of female proportions, but the claws of the fore- and mid-feet and the narrower right wing are essentially male.

The director of the Institute states that out of many thousands of adult mosquitoes examined in their laboratories only once before has such a "gynandromorph" been found.

Science News Letter, May 30, 1931

NUTRITION

Fiji Babies Raised On Coconut Milk

YOUNG COCONUTS have been successfully used as a milk substitute in feeding Fiji Island babies six months or more of age, a report recently received by the U. S. Children's Bureau indicates.

The high infant mortality among the native Fijians, coupled with a milk scarcity due to a disinclination of the islanders to raise cattle or goats, led Dr. Regina Flood-Keyes Roberts, wife of the American Consul at Suva, in the Fiji Islands, to conduct a unique health campaign in which the substitution of coconut for milk was only one of the many innovations. New rules for child rearing had to be made. Talk of thermometers, sugar of milk, sanitary milk containers, fat emulsions and such would be wasted in Fiji.

Telling when to feed the infant, for instance, Dr. Roberts did not so much as mention a clock. Instead she told mothers that they should feed their babies regularly: when the sun is up, again when the sun is half way up in the sky, once when the sun is overhead, again when it is half way down, once at sunset and when it is bedtime.

Warning against the indiscriminate feeding of children with all sorts of indigestibles, Dr. Roberts recommended the milk-like jelly of the very young coconut, when mothers could not nurse their babies and cow's and goat's milk was not obtainable. About six coconuts a day are required.

"Many Fijians think the baby can use hard food such as bananas, taro, and other things and then the baby dies," Mrs. Roberts explains. "The people say God has taken the child but the truth is the parents have killed it by feeding food before the stomach was ready and the teeth developed and strong enough to chew properly."

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First Glances at New Books

Psychology

CREATIVE MIND — C. Spearman — *Appleton,* 162 p., $2. The British psychologist explores the "springs and mechanisms" by which the human mind creates in the fields of pictorial and other fine arts and also scientific invention and discovery.

Science News Letter, May 30, 1931

Exploration

BY DOG SLED FOR BYRD—John S. O'Brien—*Rockwell,* 192 p., $2. So brilliant were the plane flights on Byrd's Antarctic expedition that we are prone to forget the slower but no less heroic treks that ground parties made with the time-honored method of dog sleds. Here Byrd's surveyor tells us something about it, in a well gotten up, well illustrated book.

Science News Letter, May 30, 1931

Lexicography-Medicine

A PRACTICAL MEDICAL DICTIONARY —Thomas L. Stedman—*Wood,* 122 p., $7.50. Eleventh revised edition of this dictionary which was originally published to correct certain mistakes in medical orthography. The appendix has tables of drugs, weights and measures, symbols, stethoscopic abbreviations, comparative temperature and barometric scales, table of elements and table of important pathogenic microparasites.

Science News Letter, May 30, 1931

Bacteriology—Soil Science

THE SOIL AND THE MICROBE—S. A. Waksman and R. L. Starkey—*Wiley,* 260 p., $3.50. Students of bacteriology and of soil science will unite in welcoming this authoritative text, giving the best and most recent information and interpretation of what is at once the most elusive group of microorganisms and the most baffling of soil phenomena.

Science News Letter, May 30, 1931

Botany

FERNS AND FLOWERING PLANTS OF HAWAII NATIONAL PARK — Otto Degener—*Honolulu Star-Bulletin,* 312 p., 95 pl., $4. This is a most worthy addition to the growing natural history literature of our national parks. The author, who has been in Hawaii long enough to be thoroughly acquainted with their unique and interesting flora, and has had considerable experience in the U. S. National Park Service, is qualified both as a botanist and as a popularizer to produce a book such as this. The present work not only gives good popular accounts of the plants, illustrated with clear-cut line drawings, but also makes interesting excursions into ethnobotany, plant economics and geological history, presenting thus an unusually well-rounded picture. Mr. Degener also has in preparation a more strictly technical FLORA HAWAIIENSIS, the first fascicle of which is about ready for publication.

Science News Letter, May 30, 1931

Ethnology

THE KAMIA OF IMPERIAL VALLEY —E. W. Gifford—*Government Printing Office,* 94 p., 25c. The Kamia Indians may have entered the Imperial Valley of California no earlier than the nineteenth century, is one conclusion by the author of this monograph. That these Indians have 30 culture traits out of 46 in common with the Yuma is another conclusion. Six Indian informants aided in the field study, which was a joint undertaking of the Bureau of American Ethnology and the University of California.

Science News Letter, May 30, 1931

Psychology

DISCOVERING OURSELVES — Edward A. Strecker and Kenneth E. Appel—*Macmillan,* 306 p., $3. An excellent introduction to mental hygiene. It should prove interesting and helpful to a wide audience.

Science News Letter, May 30, 1931

General Science

FOUNDATIONS OF SCIENCE—G. A. Bowden—*Blakiston,* 753 p., $1.68. A textbook in general science suitable for junior high school work. The author shows great ingenuity in outlining experiments that can be performed with home-made apparatus; his vocabulary, however, in places seems a bit too "grown-up" for his audience.

Science News Letter, May 30, 1931

Ornithology

BIRD BANDING BY SYSTEMATIC TRAPPING—S. Prentiss Baldwin—*Cleveland Museum of Natural History,* 43 p. An account of methods and results, by one of the best known of American field ornithologists.

Science News Letter, May 30, 1931

Physics

OPTICKS; OR A TREATISE OF THE REFLECTIONS, REFRACTIONS, INFLECTIONS AND COLOURS OF LIGHT—Sir Isaac Newton—*McGraw-Hill,* 414 p., $2.50. A most commendable project is this reprinting of Newton's great work on light. It is important, as the editors point out, because Newton's corpuscular theory of light transmission is once more an up-to-date hypothesis of physics. But further, the book is interesting as an informal account of the delightful time which the author had devising experiments with that loveliest of media—color. The editors have done well to preserve the quaint language of the original, and to follow the typographical form so closely.

Science News Letter, May 30, 1931

Geography

THE PACIFIC BASIN—G. L. Wood—*Oxford,* 340 p., $4. To compress the essentials of geographic, ethnologic and economic information about the greatest ocean, the great lands that border it and the countless islands that bestrew it, all into one average-sized book is a very considerable undertaking. The author has achieved a considerable measure of success by judicious choosing and eliminating and by terse vigor in presentation.

Science News Letter, May 30, 1931

Entomology

TROPISMS AND SENSE ORGANS OF COLEOPTERA—N. E. McIndoo—*Smithsonian Institution,* 70 p., 40c. One of the outstanding jobs of entomologists today is to devise methods for inducing insect pests to "follow their noses" to the destruction prepared for them. In this brochure one of the leading students of insect tropisms tells of the queer places where insects carry their "noses" and other sense organs, and of what kinds of lures work best on them.

Science News Letter, May 30, 1931

Psychology

MINNESOTA MECHANICAL ABILITY TESTS—D. G. Paterson, R. M. Elliott, L. Dewey Anderson, H. A. Toops, and Edna Heidbreder—*University of Minnesota Press,* 586 p., $5. A comprehensive report of an important investigation promoted by a committee of the National Research Council. The tests are given in full, and excellent illustrations show the equipment used.

Science News Letter, May 30, 1931